Space Weather Forecast

Issued on Wednesday, 17 July 2024 at 01:27 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Moderate-class X-ray flares likely (R1-R2 radio blackouts).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been High, with a strong flare observed at 16/1326 UTC. There are now up to seventeen sunspot regions on the visible disc. The largest and most complex region is currently rotating around the southwest limb. The next largest region is in the southeast, which is of moderate size and complexity. A spot in the northwest has a an unstable magnetic alignment. All other regions are small and appear largely magnetically simple at present.

Despite the number of sunspot regions, no Earth-directed coronal mass ejections have been observed.

Solar Wind / Geomagnetic Activity: The solar wind showed weak transient effects throughout. Wind speed gradually rose from background to slightly elevated. The interplanetary magnetic field was mostly moderate, but strong between 16/0330-1030 UTC. The north-south variation was almost entirely positive and varied between moderate and weak. Geomagnetic activity was Active initially (Kp 4) before becoming Quiet to Unsettled (Kp 2-3).

Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Further Moderate-class flares are likely with a slight chance of isolated Strong-class flares. This risk reducing from day 2 (18 Jul) as one active sunspot rotates around the southwest limb.

Solar Wind /Geomagnetic Activity: No further Earth directed coronal mass ejections are currently expected. The fast wind from a large coronal hole in the north is not expected at Earth, but there is a slight chance of an enhancement days 2 and 3 (18-19 Jul).

Geomagnetic activity is expected to be mostly Quiet to Unsettled, with a slight chance of Active or G1/Minor storm intervals days 1-3 (17-19 Jul) due to ongoing coronal mass ejection effects or should there be any fast wind enhancement.

Energetic Particles / Solar Radiation: Solar radiation storms are unlikely, with a slight chance of rising above the S1/Minor Storm threshold in response to any notable flares.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	10	10	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	70	60	60	60
Very Active	R3 to R5 X	No	15	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	15	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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